NOAA FISHERIES
Greater Atlantic Regional Fisheries Office

NMFS ESA Hydro Program

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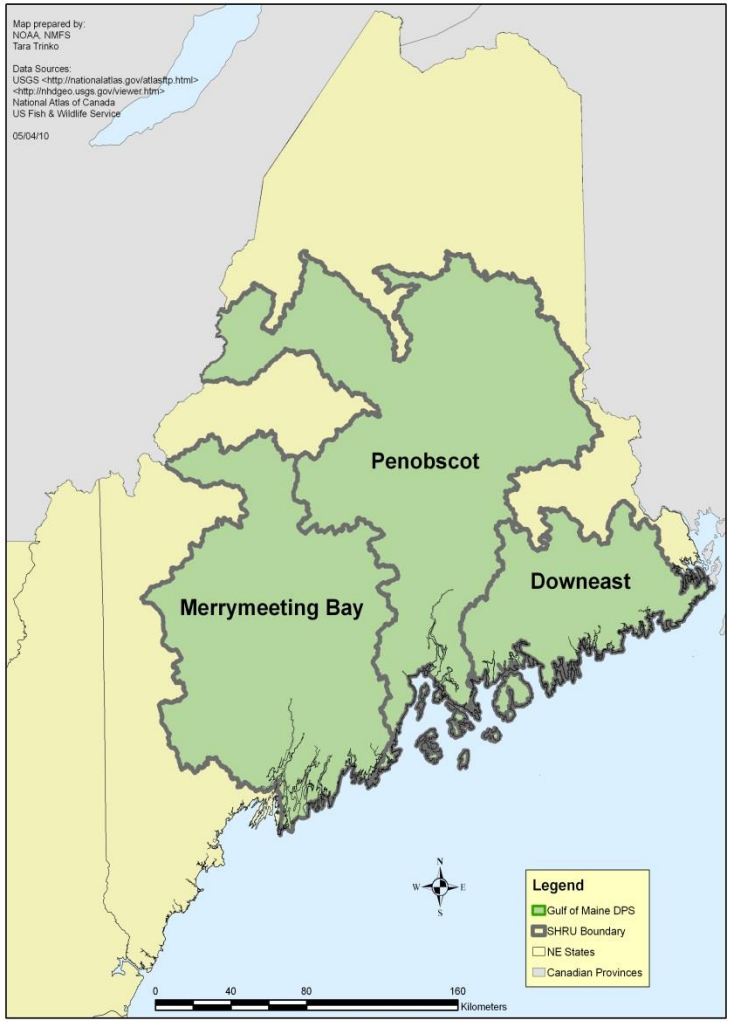
Current Status of Atlantic Salmon

- U.S. populations were listed as endangered in 2000
- The range of listed salmon was expanded in 2009 to include mainstem Penobscot, Kennebec, and lower Androcoggin Rivers.
- Three Recovery Units: Merrymeeting Bay, Penobscot, and Downeast



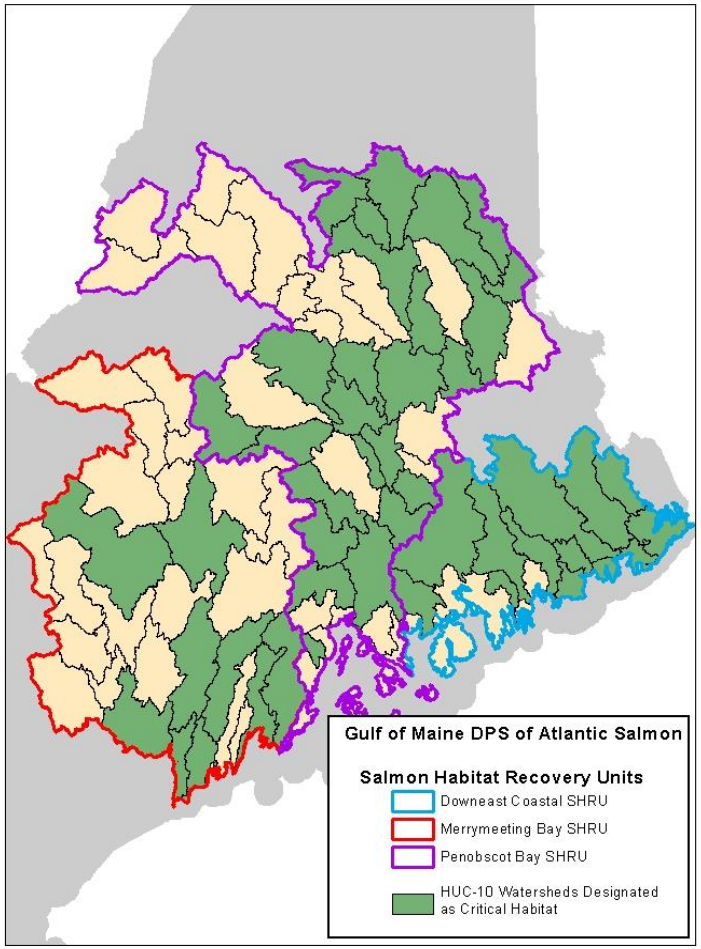
Fay et al. 2006

GOM DPS of Atlantic Salmon

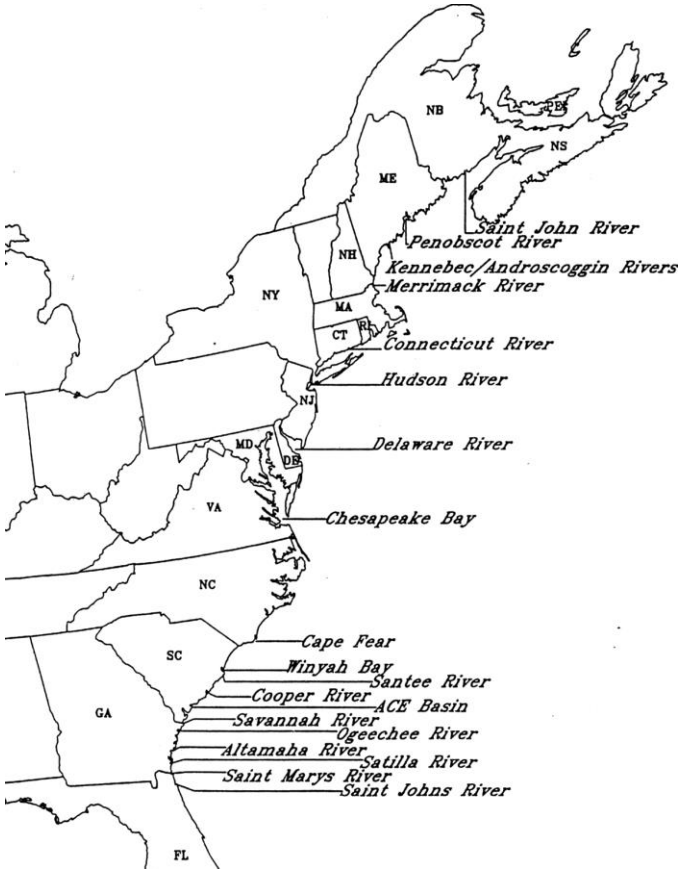
- The GOM DPS includes:
  - All anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River.
  - All associated conservation hatchery populations used to supplement these natural populations; currently, such conservation hatchery populations are maintained at Green Lake National Fish Hatchery (GLNFH) and Craig Brook National Fish Hatchery (CBNFH).
- FWS has lead in freshwater.
- NMFS has lead in marine habitat and for all dams.

Critical Habitat

- Coincident with the June 19, 2009 endangered listing, we designated critical habitat for the GOM DPS of Atlantic salmon
- Essential features of designated critical habitat include1) sites for spawning and rearing, and 2) sites for migration (excluding marine migration).
- Although successful marine migration is essential to Atlantic salmon, we were not able to identify the essential features of marine migration and feeding habitat or their specific locations at the time critical habitat was designated.



Shortnose Sturgeon



- Federally listed as endangered in 1967
- Listed under the sole jurisdiction of NOAA Fisheries
- 19 Populations occur along the East Coast
- Shortnose sturgeon in New England…
  - Maine – Penobscot River, Kennebec/Sheepscot/Andro. Complex, Saco River
  - Massachusetts – Merrimack River, Connecticut River

Atlantic Sturgeon

- Listed as 5 Distinct Population Segments in 2012
- Critical Habitat designation in the future
- Present in coastal waters, estuaries and nearly all major rivers

Sturgeon & Hydroelectric Projects

Challenges

Shortnose sturgeon typically spawn near the fall line – often at the base of a dam where operations can affect the suitability of spawning habitat, affect the movements of adults or viability of eggs and larvae

Upstream Passage – Sturgeon don't negotiate ladders well and have limited success entering fish lifts

Downstream Passage – Sturgeon make downstream movements as yearlings and adults (large variability in size) and can be vulnerable to impingement at relatively low velocities

Stranding - vulnerable to low dissolved oxygen and high temperatures that can occur in isolated pools

Hydroelectric Dams

- Hundreds of dams in the GOM DPS
- 59 FERC dams in GOM DPS
- Androscoggin – 19 FERC Dams/16 Impassable
- Kennebec – 18 FERC Dams/15 Impassable
- Penobscot – 21 FERC Dams/12 Impassable

Examples of Take At Hydro Dams

- Turbine entrainment/impingement injury or death
- Upstream and downstream fish passage delay
- Handling at fish passage facilities
- Alteration of habitat (instream flows, stranding, water quality)
- Increased predation

Implications for Hydro Owners

- **"Take" of any listed species would be a violation of section 9 of the Endangered Species Act, unless exempted through an incidental take statement (section 7) or an incidental take permit (section 10)**
  - *Take means to harass, harm, pursue, hunt, shoot, wound, kill, capture or collect.*
  - *Incidental take – take of listed fish or wildlife that results from, but is not the purpose of, carrying out an otherwise lawful activity*

Species Protection Plans

- FERC has determined a “new” listing does not trigger a section 7 consultation
- Most projects licensed for many years
- We work with Licensee to develop plan to protect species
- Licensee submits plan to FERC to amend license thus triggering section 7
- Interim and Final Plans
- Since 2009, completed section 7 consultations with FERC on 16 projects

Avoid and Minimize Take

- First step is to avoid and minimize take
- We require upstream and downstream survival performance standards at each facility
- Multiple years of monitoring

Interim Species Protection Plan

- Typically for projects with existing upstream and downstream passage facilities
- Allows Licensee to conduct passage studies
- Allows us to develop survival performance standards
- At end of term, Licensee prepares “final” plan for duration of existing FERC license
- Section 7 reinitiated

Final Species Protection Plan

- Final plan has numerical survival performance standards that must be met for duration of license
- Dam Impact Analysis of Salmon Habitat Recovery Unit
- Standards must be sufficient so recovery is not precluded
- Annual monitoring
- Check in monitoring
- Adaptive management approach to achieving standards

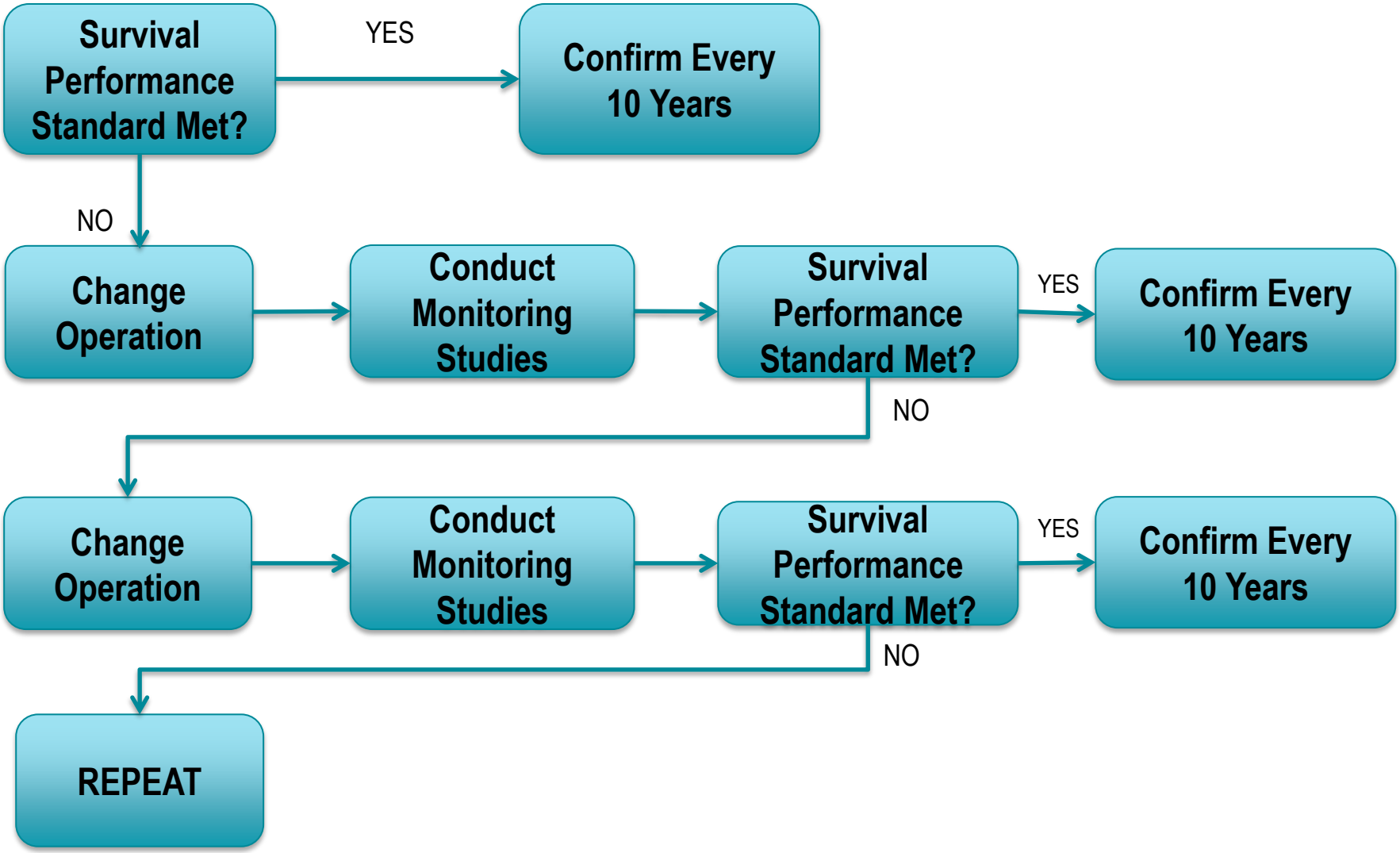
Biological Opinion

- identify the nature and extent of the effects of the federal action on listed species and critical habitat
- identify reasonable and prudent alternatives, if any, when an action is likely to result in jeopardy or adverse modification
- provide an exception for specified levels of “incidental take” otherwise prohibited under section 9 of the ESA
- provide mandatory reasonable and prudent measures to minimize the impacts of incidental take to listed species

Section 10 Permit

- 10(a)(1)(B) Secretary may permit any taking otherwise prohibited if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity
- Applicant needs to submit a conservation plan that specifies
  - Impact which will result from taking
  - Steps applicant will take to minimize and mitigate such impacts and funding for implementation
  - Alternative actions to the taking that were considered and reasons why they are not being utilized
  - Other measures that the Secretary may require as necessary or appropriate for purposes of the plan

Adaptive Management



MONITORING

- Smolt survival monitoring relatively easy
  - Paired release method to account for “natural” mortality
  - First paired release studies conducted spring 2013
- Adult survival studies very difficult
  - Lack of test fish
  - Small sample sizes
- Alternative technologies
  - Hydroacoustics
  - PIT Tags
  - DIDSON

STATUS OF PROJECTS

Project	ISPP/SPP	Duration	License Exp.	Adaptive Management Plans	Smolt Studies	Kelt Studies
Lockwood	ISPP	2019	2036	Yes	2013-2015	2014-2016
Hydro-Kennebec	ISPP	2016	2036	No	2012-2014	TBD
Shawmut	ISPP	2019	2021	Yes	2013-2015	2014-2016
Weston	ISPP	2019	2036	Yes	2013-2015	2014-2016
Brunswick	ISPP	2019	2029	Yes	2013-2015	2014-2016
Pejepscot	ISPP	2016	2022	No	2013-2015	TBD
Worumbo	ISPP	2016	2025	No	2013-2015	TBD
Lewiston Falls	ISPP	2019	2026	No	N/A	N/A
Milford	SPP	2038	2038	Yes	2014-2016	TBD
West Enfield	SPP	2024	2024	Yes	2014-2016	TBD
Weldon	ISPP	2018	2018	No	2014-TBD	TBD
Stillwater	SPP	2048	2048	Yes	2014-2016	TBD
Orono	SPP	2048	2048	Yes	2014-2016	TBD
Medway	SPP	2029	2029	No	N/A	N/A

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